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ABSTRACT

Comparison of the genotypes and frequencies of MSH receptor (MC1R) gene in Korean Cattle, Cheju Native Black Cattle, Japanese Black and Japanese Brown

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PCR-RFLP analysis of melanocyte-stimulating hormone (MSH) receptor (MCIR) gene was carried out to confirm the genotypes and frequencies in Korean Cattle, Cheju Native Black Cattle, Japanese Black, Japanese Brown, Holstein and Angus. Genetic relationship of these breeds and coat colours to alleles at the Extension locus, that encodes MC1R were also determined. Allele ED, E+ and e were detected by digestion with BsrF I (or Msp I) and Aci I. A Dominant allele ED, which is considered to be typical allele for dominant black coat colour in cattle breeds, such as Holstein and Angus, was not detected in Korean Cattle and Japanese Brown with yellowish-brown coat colour. Among 62 Cheju Native Black Cattle and 15 Japanese Black, only 10 and 11 heads respectively had the dominant allele ED. The remaining animals possessed the genotype E+/E+ or E+/e, which probably reflected alleles at the A-locus which were supposed to give rise to the recessive black colour. Several animals of Cheju Native Black Cattle and Japanese Black possessed the genotype ED/-, probably reflecting the genetic introgression of ED allele into these breeds during the crossbreeding period. It is concluded that the difference of MCIR genotype and frequency among these breeds may be useful for conservation of endangered Cheju native Black Cattle and also genetically discriminating between meat of Korean Cattle and that of Holstein.

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